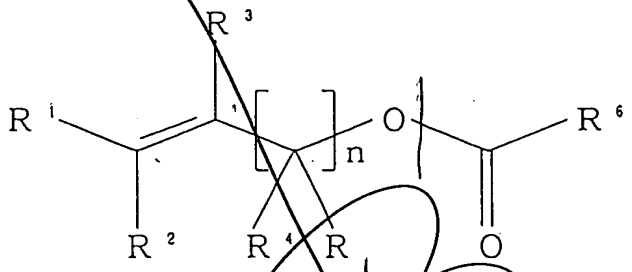
CLAIMS

1. A process for producing a hydrogenated ester by hydrogenating an unsaturated group-containing ester represented by the following general formula (1) in the presence of a hydrogenating catalyst so as to produce a hydrogenated ester corresponding to the unsaturated group-containing ester.



... (1)

(wherein R^1, R^2, R^3, R^4 and R^5 denote an arbitrary alkyl group containing 1 - 10 carbon atoms, an arbitrary alkenyl group containing 1 - 10 carbon atoms, or a hydrogen atom and may be the same as or different from each other; the alkyl group and alkenyl group may be either straight-chain or branched; R^6 denotes an arbitrary alkyl group which contains 1 - 10 carbon atoms and may be either straight-chain or branched; and n is 0 or 1.)

2. A process for producing a hydrogenated ester according to claim 1, wherein the unsaturated group-containing ester represented by the general formula (1) is diluted with an inert solvent and is subjected to a hydrogenation reaction.

3. A process for producing a hydrogenated ester according to claim 2, wherein the inert solvent is the corresponding hydrogenated ester.

4. A process for producing a hydrogenated ester according to claim 3, wherein the corresponding hydrogenated ester is a portion or the entirety of the recycled hydrogenated ester which has been produced by

~~The hydrogenation reaction of the unsaturated group-~~ containing ester represented by the general ~~formula (1).~~

~~5.~~ A process for producing a hydrogenated ester ~~according to any of claims 2 — 4~~, wherein the concentration of the unsaturated group-containing ester represented by general ~~formula~~ (1) at the time of the hydrogenation reaction thereof is in the range of 1 wt.% - 50 wt.% based on the entirety of the raw material liquid containing ~~the~~ unsaturated group-containing ester.

~~6.~~ A process for producing a hydrogenated ester ~~according to any of claims 2 — 5~~, wherein the reaction temperature at the time of the hydrogenation reaction is in the range of 0°C - 200°C.

~~7.~~ A process for producing a hydrogenated ester ~~according to any of claims 2 — 6~~, wherein the unsaturated group-containing ester represented by the general formula (1) is at least one compound selected from the group consisting of: allyl acetate, crotyl acetate, methallyl acetate, allyl propionate, crotyl propionate, methallyl propionate, vinyl acetate, vinyl propionate, 1,3-butadienyl acetate, and 1,3-butadienyl propionate.

~~8.~~ A process for producing a hydrogenated ester ~~according to any of claims 2 — 7~~, wherein the hydrogenating catalyst comprises at least one element selected from the group consisting of Group VIII elements, Group IX elements or Group X elements in the periodic table.

~~9.~~ A process for producing a hydrogenated ester ~~according to any of claims 2 — 8~~, wherein the hydrogenation reaction is conducted by a liquid-phase reaction by use of a fixed bed-type reactor.

~~10.~~ A process for producing a hydrogenated ester by ~~hydrogenating an allyl-type ester represented by a~~ general formula (1) (n = 1) by using a hydrogenating catalyst so as to produce a hydrogenated ester corresponding to the allyl-type ester, wherein ~~the~~

concentration of a carboxylic acid in a raw material containing the allyl-type ester represented by the general formula (1) is 1 wt.% or less.

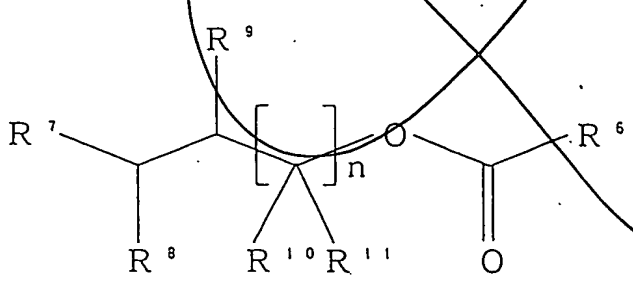
11. A process for producing a hydrogenated ester according to claim 10, wherein the hydrogenating catalyst comprises at least one species selected from the group consisting of compounds of Group VIII elements, Group IX elements or Group X elements in the periodic table.

12. A process for producing a hydrogenated ester according to ~~claim 10 or 11~~, wherein the hydrogenating catalyst comprises at least one species selected from the group consisting of compounds of palladium, rhodium or ruthenium.

13. A process for producing a hydrogenated ester according to ~~any of claims 10 - 12~~, wherein the allyl-type ester represented by the general formula (1) is at least one species of allyl-type ester selected from the group consisting of allyl acetate, crotyl acetate, methallyl acetate, allyl propionate, crotyl propionate, or methallyl propionate.

~~14. A hydrogenated ester which has been produced by a process according to any of claims 2 - 13.~~

15. A hydrogenating catalyst which contains at least one metal selected from the group consisting of Group VIII elements, Group IX elements, and Group X elements in the periodic table, and is to be used for hydrogenating an unsaturated group-containing ester represented by the following formula (1) to thereby produce a hydrogenated ester represented by the following formula (2), wherein the catalyst has an acidity of 1.0×10^{-1} mmol/g or less:



... (2)

(wherein n represents 0 or 1, R^6 represents a C_1 - C_{10} alkyl group, and each of R^7, R^8, R^9, R^{10}, and R^{11} represents a C_1 - C_{10} alkyl group, a C_1 - C_{10} alkenyl group, or a hydrogen atom independently to each other.)

16. A hydrogenating catalyst according to claim 15, wherein the at least one metal selected from the group consisting of Group VIII elements, Group IX elements, and Group X elements in the periodic table is at least one species selected from the group consisting of palladium, ruthenium and rhodium.

17. A process for producing a hydrogenating catalyst according to ~~claim 15 or 16~~ claim 15, which comprises at least the following first and second steps:

first step: a step for causing a metal compound to be carried on a carrier having an acidity of 1.0×10^{-1} mmol/g or less, to thereby obtain a metal compound-carrying carrier; and

second step: a step for reducing the metal compound of the metal compound-carrying carrier obtained in the first step, to thereby obtain a hydrogenating catalyst.

18. A process for producing a hydrogenating catalyst according to claim 17, wherein the metal compound is a compound comprising at least one species selected from the group consisting of palladium, ruthenium and rhodium.

19. A process for producing a hydrogenated ester, wherein an unsaturated group-containing ester represented by the general formula (1) is hydrogenated by using a hydrogenating catalyst according to ~~claim 15 or 16~~ claim 15, to thereby produce a hydrogenated ester represented by the general formula (2).

20. A process for producing a hydrogenated ester, wherein at least one species of an unsaturated group-containing ester selected from the group consisting of allyl acetate, crotyl acetate, methallyl acetate, allyl propionate, crotyl propionate, methallyl propionate,

vinyl acetate, 1,3-butadienyl acetate, 1-methyl-1-propenyl acetate, vinyl propionate, 1,3-butadienyl propionate, and 1-methyl-1-propenyl propionate is hydrogenated by using a hydrogenating catalyst according to ~~claim 15 or 16~~.

21. A process for producing a hydrogenated ester according to claim 19 or 20, wherein the hydrogenation is carried out at a reaction temperature in the range of 0°C to 200°C.

22. A process for producing a hydrogenated ester according to any of claims 19 - 21, wherein the unsaturated group-containing ester as a raw material is diluted with an inert solvent and the resultant diluted liquid is used as the raw material-containing liquid to be hydrogenated.

23. A process for producing a hydrogenated ester according to claim 22, wherein the inert solvent is a hydrogenated ester corresponding to the unsaturated group-containing ester as a raw material.